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ABSTRACT

The relationship of Nelson-Denny Reading Test scores and an English course placement recommendation to academic success of Educational Opportunity Program students at the University of Washington was studied. The placement recommendation was based on a writing sample and test scores. The 207 freshmen students who entered in either 1976 or 1978 were identified as representing the following divisions: 20 American Indians, 67 Asians, 72 Blacks, 34 Chicanos, and 14 economically disadvantaged. When analyses were applied to all students regardless of division, the results suggest that neither the Nelson-Denny Reading Test nor the placement recommendation was an effective predictor of academic success, either generally or specifically for English courses. High school grade point average (GPA) was found to be a better predictor in general. When data were analyzed within divisions, the following findings emerged: performance was moderately well predicted by the test scores for the economically disadvantaged students, and somewhat less so for Black and American Indian students: Asian students exhibited nearly zero correlations between test scores and success measures, and the same correlations for Chicano students were often slightly negative. High school GPA predicted success as well as when both GPA and test scores were used as predictors, even within divisions. It is suggested that the Nelson-Denny Test may lack predictive validity for this study group, because it was too difficult for them. Low average test scores for the study sample provide evidence for this interpretation. (SW)

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The Relationship Between Nelson-Denny Test Scores and Academic Performance of Educational Opportunity Program Students

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Abstract

The focus of this study was on the relationship of Nelson-Denny Reading Test scores and an English course placement recommendation based on a writing sample and test scores with indices of academic success for Educational Opportunity Program (EOP) students at the University of Washington (UW). The sample contained 207 EOP students who entered UW as Freshman in either 1976 or 1978 and who had taken the test as part of the admissions process. Of the 207 students, 20 were of the American Indian Division, 67 were of the Asian Division, 72 were of the Black Division, 34 were of the Chicano Division, and 14 were of the Economically Disadvantaged Student Division. One hundred and eighty-five of the students were of EOP admissions Group II, while the remaining 22 were of admissions Group III.

When analyses were applied to all students regardless of division, the results suggested that neither the Nelson-Denny Reading Test nor the English course placement recommendation was an effective predictor of academic success, either generally or specific to English courses. Indeed, high school grade point average (GPA) proved generally superior as a predictor. However, when data were analyzed within divisions, differential patterns of predictive validity emerged. UW performance was moderately well-predicted by the test scores for the Economically Disadvantaged students, and somewhat less so for Black and American Indian students. Asian Division students exhibited nearly zero correlations between test scores and success measures, and the same correlations for Chicano Division students were often slightly negative. Multiple correlations suggested that high school GPA as a single predictor generally predicted success measures as well as when both it and test scores were used as predictors, even within divisions. The major exception was the Economically Disadvantaged Division, which contained a small number of students.

Reviewers of the Nelson-Denny Test have questioned its usefulness with students like those in the present study. Their contention arises from the difficulty of the test for other than highly selected college students. The students in this study were of EOP admissions Groups II and III, both of which are defined as containing those individuals who would not be admissable under regular UW criteria. Thus, the test may lack predictive validity because it was too difficult for those who took it. Low average test scores for our sample provide evidence for this interpretation.

The Relationship Between Nelson-Denny Test Scores and Academic Performance of Educational Opportunity Program Students

Introduction

This is the second report on a series of evaluation studies conducted by the Educational Assessment Center relating to the revised admission system for Autumn, 1980, applicants to the University of Washington (UW) Educational Opportunity Program (EOP). One of the significant changes in the revised system was a change in policy concerning the standardized testing of prospective EOP students. When the revisions went into effect, EOP applicants for Autumn, 1980, were required to submit scores from a college admissions test (the Washington Pre-College Test (WPCT), the Scholastic Aptitude Test (SAT), or the American College Testing Examination (ACT), or to take the English Language Usage portion of the Comprehensive Test for Basic Skills (CTBS). The latter test was also required for those persons who took an admissions test but whose scores fell below a certain level (see James, Note 1).

Prior to Autumn, 1980, a much greater use, to be elaborated below, was made of Nelson-Denny Test. The purpose of the study to be presented in this report was generally to determine how effective Nelson-Denny test scores were in predicting the academic performance, both generally and specific to English courses, of those EOP students who took the test. A secondary purpose was to provide baseline data to which the predictive quality of the CTBS and of college admission tests can be compared.

The Nelson-Denny Test

The Nelson-Denny Reading Test is composed of two parts: a 100 item vocabulary test and a 36 item reading comprehension test. Each item is written in a multiple-choice format with five alternatives. Testees are given ten minutes to complete the vocabulary portion of the test, and twenty minutes to complete the comprehension portion. According to the Examiner's Manual (Note 2), the test is appropriate for measuring the general reading

ability of students within grades 9 through 16. The test was reviewed by Robert A. Forsyth, Professor of Education at the University of Iowa and by Alton L. Raygor, Professor of Educational Psychology and Coordinator, Reading and Study Skills Center, University of Minnesota. These reviews are found in the Eighth Mental Measurements Yearbook (Buros, 1978, p 1206-1211) We shall refer to aspects of these reviews in the discussion portion of the report.

EOP Testing Requirement

Prior to Autumn, 1980, students admitted to EOP were placed into one of three admissions groups, with group membership being relevant to the requirement to take the Nelson-Denny Test. Basically, Group I persons were admissable under the University's standard admissions policy. Those entering from high school would be expected to have a high school grade point average (GPA) of 2.50 or above and no academic deficiencies. Persons falling into Group I were not required or requested to be examined with the Nelson-Denny Test.

Group II students were defined as those persons who were not admissable by standard UW requirements but who were thought to have a reasonably favorable chance to successfully complete a University education. Group II persons typically had a high school GPA of 2.00 to 2.50 and no more than one academic deficiency. Group II students who were admitted were requested to take the Nelson-Denny Test and to complete a writing sample which was then assessed by the English Department. The purpose of the test was for placing students into the proper English course. Even though the test and writing sample was requested for Group II students; in fact, not all students within the group complied.

Group III persons were generally considered those of high risk with regard to successful completion of a University education. Typically Group III admittees came with a high school GPA below 2.00 and with other academic deficiencies. For this group the Nelson-Denny test and the writing sample were required for admissions as well as for placement into their first English course.

The Sample Studied

Sample Selection. EOP students who entered the University of Washington

in the Autumn Quarter of 1976 and 1978 directly from high school and who took the Nelson-Denny Test were initially selected for this study. Of these, only students having the following information available were included in the final sample: Nelson-Denny Test scores (both vocabulary and reading comprehension), English placement information based on the Writing Sample, high school GPA and UW transcript. In order to identify those students who meet the criteria, first, the list of students who took the Nelson-Denny Test (obtained from the English Department and from the Office of Minority Affairs) was collated with the tenth-day EOP alpha list regarding attendance in Autumn Quarter, admissions group, and last school type. The high school GPA's were located from the EOP scholarship list. Finally, UW transcripts were taken from the Registrar's Office. Of 313 students who were identified through the first step, 90 were excluded because their high school GPAs or other information were not available, and 16 were excluded because their transcripts were not located. As a result 207 students, or 66% of the initial sample, were selected for this study.

Ethnicity of the Sample. Of the 207 students within the sample, 20 (9.6%) were of the American Indian (AI) division, 67 (32.3%) were of the Asian Division (As), 72 (34.8) were of the Black Division (Bl), 34 (16.4%) were of the Chicano Division (Ch), and 14 (6.5%) were of the Economically Disadvantaged Student Division (ED).

Group Membership and Year of Entry. One-hundred and fifteen students in the sample entered UW in 1976 and 92 in 1978; 185 of the students were classified into Group II and 22 into Group III. Of the 185 Group II students, 102 entered in 1976 and 83 in 1978. Of the 22 Group III students, 13 entered in 1976 and 9 in 1978.

Of all those Group II students who entered in 1976 or 1978, approximately 33% took the Nelson-Denny Reading Test. Of those taking the test, 79% became a part of our sample. Forty-four of the remaining 50 students were excluded because we were unable to obtain their high school GPA. Essentially all of the 1976 and 1978 Group III entrants took the Nelson-Denny Reading Test. However, our sample contained only 28% of the entrants. Again most of those who were excluded from the sample had no high school GPA.

An important question to ask given these percentages is, first, what

differentiated those Group II students who took the Nelson-Denny Reading Test from those who did not, and, hence, did not become a part of our sample? Frankly, we do not know other than to assume that the system was such that students could choose not to take the test and many self-selected out of it. Secondly, to what can we attribute the absence of a high school GPA? For the Group III students, many without a high school GPA had achieved their high school diploma through the G.E.D. test. We have no explanation for the others. These questions have direct bearing on considerations of the population from which our students could be considered a random sample, and, hence, to what population we can generalize our results. Given the ambiguity surrounding this issue, we are inclined to seldom generalize our results beyond the sample studied and generally avoid including tests of statistical significance. Rather, we take the view that these results are largely descriptive of the sample studied and should not be taken as necessarily characterizing other groups of students.

Variables

From UW records data on the following variables were collected for each student.

- Entering year
- EOP Admissions Group
- EOP division
- Sex
- Nelson-Denny Test Scores (Vocabulary, Reading Comprehension, and Total Score)
- Writing Sample Placement
- High School GPA
- Total number of quarters completed (by Spring, 1980)
- Current Enrollment Status (enrolled or not in Spring of 1980)
- First year GPA
- Cumulative GPA
- Total credits earned (by Spring, 1980)
- Title of the first English course taken and its grade
- Title, grade, and number of repeats of each English course taken

Entering year, EOP Admissions Group (Group II or III), EOP division (American Indian, Asian, Black, Chicano, or Economically Disadvantaged), and sex were taken from the tenth day EOP alpha list. The Nelson-Denny Test scores and Writing Sample placement were obtained from the English department. The latter is the level of recommended English course for the student by the English department based on the Nelson-Denny Test scores and especially on the Writing Samples. Each student is recommended to one of three levels of English courses: (1) Not recommended for any course (too poor to be enrolled in English 104-5), (2) English 104-5, (3) Regular English courses (English 171 or 181). The rest of the variables were taken from UW transcripts.

Results

Admissions Group. As noted earlier, while entering GPA was a major factor in determining to which admissions group an applicant was assigned, in fact other factors are also considered, such as academic deficiencies, availability of WPCT score, and other information on the previous school record. That is, students who have the same high school GPA could be classified into different admissions groups depending on other factors. In our sample, Group II and III cannot be distinguished by the high school GPA alone. Although Group II students are higher in average high school GPA than Group III students (2.78 and 1.78, respectively), the ranges of entering GPA overlaps substantially. The range for Group II was from a low of 1.71 to a high of 3.88. The corresponding range for Group III students was 1.19 through 3.06.

Admissions groups can not be considered as homogeneous groups either in terms of their previous academic record or in terms of their promise at UW. Thus, group membership would not be expected to show differential predictive power of the Nelson-Denny Test and high school GPA. In addition the number of Group III students was small. Therefore, all further analyses were performed by combining Group II and III students.

Average Test Scores. In Table 1, the number of students within each of the five divisions and from the two years is listed. Also found in Table 1 are the means and standard deviations for the test scores. As mentioned previously, the vocabulary portion of the Nelson-Denny Reading Test consists of 100 items and the averages reported are based on the number of items answered correctly. The reading comprehension portion consists of 36 items and following the recommendation of the test's Examiners Manual (Note 2), the average score is based on double the number of items answered correctly. The total score is the simple sum of the number of vocabulary items answered correctly plus twice the number of reading comprehension items answered correctly.

Table 1

Number of Students and Test Score Averages by EOP Division

EOP Division	Number of Students			Nelson-Denny (ND) Test Score Means (Standard Deviations)		
	1976 Entry	1978 Entry	Total	Vocabulary (VOC)	Reading Comprehension (RC)	Total (TOT)
American Indian (AI)	9	11	20	30.65(11.81)	35.60(9.87)	66.25(20.11)
Asian (As)	46	21	67	17.31(10.32)	28.46(8.57)	45.78(15.77)
Black (Bl)	36	36	72	23.57(11.69)	30.39(10.05)	53.96(20.30)
Chicano (Ch)	18	16	34	28.09(13.65)	35.65(11.06)	63.74(23.60)
Economically Disadvantaged (ED)	6	8	14	32.29(12.70)	40.00(10.85)	72.29(21.38)
Total	115	92	207	23.56(12.77)	31.78(10.44)	55.34(21.40)

In regard to average test scores, the Economically Disadvantaged Division students had the highest average test scores, followed by American Indian Division students, while Asian Division students had the lowest average scores, followed by the Black Division students. The differences

among the five divisions tends to be large, particularly between Asian and Economically Disadvantaged. One should recall, however, that the students taking the Nelson-Denny Test do not represent exhaustive samples of Division Students and are, to an extent, self-selected. Thus, one should exercise caution in drawing conclusions from these results about general levels of entering English language ability within divisions.

It is also interesting to note that generally the average scores were low relative to what one could achieve by guessing alone. For the vocabulary portion, one could expect to receive a score of about 20 by guessing alone. Yet the Asian Division mean is below this number, and the means of the other divisions are not much above it. However, the test is 100 items long, with only ten minutes to respond. Thus, to some extent these low means are due to the speeded nature of the test. Given more time, test scores would almost surely have risen.

The expected guessing score for the Reading Comprehension portion is 28.8, and again the Asian Division students are below this number, but only slightly. Other divisions exhibit averages above this level, but not by a great deal. Thus, whether through the content or the time limits or some combination of the two, the test appears to have been quite difficult for those persons taking it.

Cumulative Academic Performance Measures. The Nelson-Denny Reading Test scores can be evaluated in terms of how well they predicted student academic performance either in specific UW English courses or in the cumulation of all courses. We will present data on variables relating to cumulative performance in this section and deal with English course performance in the following section.

When students enter the EOP, they bring with them an "Entering GPA", which is for the students within this sample their high school GPA. Thus, in making either admissions or placement decisions data from both sources are available. In presenting results within this and the following section, we will often present relationships with Entering GPA as well as test scores for comparative purposes. To anticipate these comparisons in Table 2, the correlations between Entering GPA and Test Scores and Writing Sample recommendation are presented. For the latter variable, No Recommendation was coded "0", an English 104 recommendation was coded "1", and a Regular English recommendation was coded "2". These correlations are presented for all students, for 1976 and 1978 entrants, and for students within each division.

Table 2

Correlations between Test Scores and Entering GPA

		Test Score			
Group	N	ND-VOC	ND-RC	ND-TOT	W.S.*
All	207	-.15	-.02	-.10	-.05
'76 Entrants	115	-.24	-.11	-.20	-.15
'78 Entrants	92	-.04	.08	.01	.05
Divisions					
A.I.	20	.18	.64	.38	.19
As.	67	.01	-.01	.00	-.03
Bl.	72	.07	.13	.10	.16
Ch.	34	-.30	-.28	-.31	-.05
E.D.	44	.13	.34	.25	.10

*Writing Sample recommendation

Generally, the correlations exhibited in Table 2 are small in magnitude, much smaller than typical high school GPA, test score correlations. For example, the correlation between the Washington Pre-College Test and high school GPA has been reported as nearly .50 (see Gillmore, Note 3, de Wolf, Note 4). While the test score, entering GPA correlation was actually slightly negative over all students in our sample, one can observe differential patterns of relationships within the divisions. The Asian and Black Divisions exhibit essentially no relationship. The small number in the American Indian and Educationally Disadvantaged Divisions show positive relationship. Most surprisingly, correlations for the Chicano division are actually negative.

In Table 3, the correlations of test scores and Entering GPA with both UW first year GPA and UW cumulative GPA are presented. For first

year GPA, only students are included who completed their first year at UW. For cumulative GPA, all students in the sample are included, regardless of the number of quarters upon which it is based. Also presented in Table 3 are multiple correlations, using both the Nelson-Denny total score and the Entering GPA's as predictors.

Table 3

Correlations of Test Scores and Entering GPA with First Year GPA and Cumulative GPA

Group	GPA	(N)	ND-VOC	ND-RC	ND-TOT	W.S.	Ent.GPA	Multiple Corr.
All	1st Year	(169)	.15	.20	.19	.12	.46	--
	Cum.	(207)	.04	.09	.07	.13	.49	.50
'76	1st Year	(95)	.12	.14	.14	.07	.42	--
Entrants	Cum.	(115)	.04	.08	.07	.12	.43	.46
'78	1st Year	(75)	.17	.26	.23	.18	.53	--
Entrants	Cum	(92)	.03	.11	.07	.15	.56	.56
Divisions								
American Indian	1st Year	(14)	.42	.32	.41	.27	.31	--
	Cum.	(20)	.16	.18	.18	-.02	.31	.31
Asian	1st Year	(62)	-.01	.22	.11	.00	.42	--
	Cum.	(67)	.12	.28	.23	.13	.41	.48
Black	1st Year	(57)	.45	.36	.44	.31	.38	--
	Cum.	(72)	.37	.31	.36	.38	.46	.49
Chicano	1st Year	(26)	.01	-.24	-.11	.17	.49	--
	Cum.	(34)	-.16	-.29	-.20	.21	.53	.54
Econ. Disad.	1st Year	(10)	.27	.56	.45	.45	.71	--
	Cum.	(14)	.30	.54	.45	.41	.42	.58

*The multiple correlation is computed with Cumulative GPA as the criterion and ND-TOT and Entering GPA as the predictors.

The results presented in Table 3 suggest that the Nelson-Denny Test is not a good predictor of overall academic success when correlating over all students in our sample. By comparison, Entering GPA appears to be a considerably better predictor. Relative to the entire group test results are better predictors within the American Indian, Black, and Economically Disadvantaged Divisions, where the magnitude of the correlations are roughly equivalent to those of Entering GPA. The correlation of test scores and GPAs within the Asian and Chicano Divisions are considerably smaller than the correlations of Entering GPA with 1st Year and Cumulative GPAs. In fact, the Nelson-Denny scores actually correlate negatively with both 1st Year and cumulative GPA for Chicano Division students.

Multiple regression results indicate that generally the Nelson-Denny total test score adds little to the prediction of cumulative GPA when combined with Entering GPA as compared to Entering GPA as the only predictor. The major exception is the Asian Division, where the Nelson-Denny scores add an additional .07 to the correlation. The increase within the Economical Disadvantaged Student Division is even larger; however, one must view this result with a great deal of caution since the sample size is very small (N = 14).

Additional general achievement variables which may be viewed are UW credits earned, total number of quarters completed, and enrollment status, all as of Spring Quarter, 1980. Each of these variables must be analyzed separately for the two years of entry, since 1976 entrants clearly have the opportunity for greater quantities of these variables.

First, the correlations between the test scores and Credits Earned and Quarters Completed is found in Table 4 for both 1976 and 1978 entrants. Also included in Table 4 is the correlation of Entering GPA with these two variables. For both years of entry, test scores exhibit a very low correlation with credits earned and quarters complete. Interestingly, the correlations of entering GPA with these same variables are moderately strong.

The enrollment status of students as of Spring Quarter, 1980, can be considered as falling into one of three categories: (1) enrolled and completed Spring Quarter, (2) did not enroll Spring Quarter, and (3) enrolled but did not complete Spring Quarter. Because we did not know the intentions of students in the last two categories, we could not know how

Table 4

Correlations of Test Scores and Entering GPA
with Credits Earned and Quarters Completed

	1976 Entrants (N=92)		1978 Entrants (N=115)	
	Credits Earned	Quarters Completed	Credits Earned	Quarters Completed
ND-VOC	-.00	-.00	-.00	-.05
ND-RC	.15	.12	.09	.02
ND-TOT	.07	.06	.04	-.02
W.S.	.05	.03	.15	.05
Ent. GPA	.45	.42	.53	.50

many students in each category had "dropped-out" or "stopped-out" or the reasons for either. Hence, no further sub-classification was attempted. Nelson-Denny Test scores and Entering GPA means are presented for the students in each of the three categorys for each entering year in Table 5. Also presented are the average UW cumulative GPA's for each category.

As can be seen in Table 5, students who enrolled in and completed Spring Quarter had slightly higher Nelson-Denny Total test scores than those who had not enrolled for the same quarter. Surprisingly, the few persons who had enrolled but not completed Spring Quarter exhibited the highest average test scores for both years of entry. No logical explanation exists for this result. While the differences among the three groups were relatively small for test score averages, the corresponding differences for Entering GPA were much larger. Persons enrolling and completing Spring Quarter entered with considerably higher GPA's than those who did not complete Spring Quarter. Expectedly, those who enrolled and completed Spring Quarter also had the highest average cumulative GPA's.

Table 5

Average Nelson-Denny Test Scores and Entering GPA
within Spring Quarter, 1980, Enrollment Status Categories

Enrollment Status	N	Mean (Standard Deviation) NDVOC	NDRC	NDTOT	ENTGPA
1976 Entrants					
Enrolled and Completed	94	22.91(12.68)	33.74(9.82)	56.65(20.81)	2.83(.50)
Not Enrolled	75	23.96(12.22)	30.59(10.04)	54.55(20.16)	2.59(.59)
Enrolled, Not Completed	6	31.50(7.39)	37.33(6.50)	68.83(11.72)	2.66(.75)
1978 Entrants					
Enrolled and Completed	35	23.23(13.61)	33.43(10.30)	56.66(22.36)	2.06(.46)
Not Enrolled	54	22.33(12.85)	30.67(11.16)	53.00(22.58)	2.53(.50)
Enrolled, Not Completed	3	31.00(14.99)	29.33(12.04)	60.33(22.64)	2.43(.65)

As discussed earlier, the students were recommended for English course placement as a result of a writing sample plus the test scores. Three possible recommendations could come from the analyses: not recommended for college level English instruction, recommended for English 104, and recommended for regular English courses. In Table 6, the number of students within each of the three Spring Quarter, 1980 enrollment statuses and within each of the three recommendations is presented.

As can be seen from the frequencies presented in Table 6, of those persons enrolled the percentage of those individuals recommended for regular English was higher than the percentage of those individuals who were not recommended for regular English. However, a greater percentage of 1976 entrants in the Not Recommended category were enrolled rather than not enrolled. The latter percentages are reversed for 1978 entrants.

Table 6

Number of Students within Each Spring Quarter, 1980

Enrollment Status and Each Possible Writing Sample Recommendation

Enrollment Status	Not Recommended	English 104	Regular English
1976 Entrants			
Enrolled and Completed	13(38.2)	15(44.1)	6(17.6)
Not Enrolled	22(29.3)	47(62.7)	6(8.0)
Enrolled, Not Completed	5(83.3)	1(16.7)	0(0.0)
1978 Entrants			
Enrolled and Completed	8(22.9)	22(62.9)	5(14.3)
Not Enrolled	17(31.5)	33(61.1)	4(7.4)
Enrolled, Not Completed	2(66.7)	0(0.0)	1(33.3)

In general, no trend is evident in the frequencies which would suggest that for these students, the recommendation was related to Spring Quarter, 1980, enrollment status.

English Course Grades

First English Course. The major purpose of the Nelson-Denny Test, as used by EOP, was to place students into their first UW English course. For each student the English course which appeared first in a transcript, regardless of the quarter, was coded as the first English course. When the English course first appeared with another English course, the lower level course was considered as the first English course. For our sample, 12 persons enrolled in no English courses during their stay at UW. The remaining 195 enrolled in 21 different first English courses. These courses, along with the number of persons from each division enrolling within each, is found in Table 7:

along with the number of persons from each division enrolling within each, is found in Table 7.

Table 7

Number of Persons Enrolling Within Their First English Course

Course Type	Division					
	Amer I	Asian	Black	Chicano	EDSD	Total
AAS 108	--	8	--	--	--	8
CHST 491	--	--	--	6	--	6
Engl 104	13	42	47	22	10	134
" 105	--	--	--	--	--	--
" 106	--	--	--	--	--	--
" 171	2	6	5	1	--	14
" 181	1	--	5	--	3	9
" 111	1	2	5	--	--	8
" 211	--	--	--	--	--	--
" 213	--	--	--	--	--	--
" 121	--	--	--	--	--	--
" 223	--	2	--	--	--	2
" 241	--	--	--	--	--	--
" 270	--	--	--	--	--	--
" 172	--	--	1	1	--	2
" 212	1	--	--	--	--	1
" 150	--	4	--	1	--	5
" 151	--	2	1	--	--	3
" 231	1	--	--	--	--	1
" 221	--	--	1	--	--	1
" 277	--	--	1	--	--	1
Total	66	19	13	31	66	195

In Table 8, the average and range of test scores for persons taking each of the First English Courses is listed. Also listed in Table 8 are the number of students who received each of the three possible recommendations based on the writing sample and the test scores. Examination of this table reveals a wide range of test scores for all of the courses in which significant numbers of students enrolled. The average scores are lowest for Eng. 150 and 151, and ASS 108. The average test scores of students beginning with Eng. 104 are intermediate, and the remaining courses contained students with relatively high average test scores. Thus, in general, the first English course taken was related, as planned, to Nelson-Denny scores. However, there were also exceptions, as the ranges of scores clearly indicate.

The exceptions are even more graphically portrayed in viewing the number of persons receiving each writing sample-based recommendation. Almost all first courses contained persons at more than one level of recommendation. For example, almost one-third of the students in English 104 were not recommended for English 104. Again, however, the majority of the students followed the recommendation.

In Table 9, the first English course grade distribution, regardless of the particular course taken, is presented for all students and for students within each division. In Table 10, the correlations between those grades in Table 9 which are numerical (0.0 to 4.0) and the test scores are presented, again over all students and within divisions. For comparison the course grades were also correlated with Entering GPA.

The correlations between test scores and first English course grade exhibited in Table 10 for all students are quite low. In fact, Entering GPA although based on grades from a variety of high school courses correlated considerably more highly with the first English grade than did the test scores. Based on data from all students, neither the Nelson-Denny test nor the Writing Sample recommendation would appear to be a good predictor of the grade obtained in the first English course. However, this conclusion must be altered somewhat when looking at the results of separate analyses within divisions. Although based on a small number of persons. The test scores appear to be a much better predictor for American

Table 8

First English Course, Test Scores, and Writing Sample Recommendations

			Means (Standard Deviations) Range of Scores			
English	Course	N	NDVOC	NDRC	ND TOT	W.S.*
	AAS 108	8	12.00(5.24) 6-23	20.24(3.53) 16-26	32.25(5.14) 22-41	7,1,0
	CHS 491	6	38.00(16.95) 17-65	42.00(10.07) 34-62	80.00(26.48) 53-127	0,5,1
	ENG 104	134	20.01(10.20) 2-49	30.20(9.53) 12-56	51.21(17.50) 17-93	43,90,1
	ENG 171	14	33.07(14.55) 13-62	37.43(8.89) 24-56	70.50(20.70) 47-114	0,10,4
	ENG 181	9	39.56(10.30) 27-58	41.56(8.37) 30-54	81.11(16.88) 59-112	0,1,8
	ENG 111	8	27.24(10.84) 8-41	33.75(9.51) 14-46	61.00(19.65) 22-81	2,3,3
	ENG 223	2	40.50(2.50) 38-43	48.00(4.00) 44-52	88.50(1.50) 87-90	0,0,2
	ENG 172	2	53.00(1.00) 52-54	53.00(5.00) 48-58	106.00(6.00) 100-112	0,0,2
	ENG 212	1	25.00	34.00	59.00	0,1,0
	ENG 150	5	9.40(4.22) 5-17	24.00(6.32) 12-30	33.40(6.65) 21-41	5,0,0
	ENG 151	3	8.67(0.94) 8-10	24.00(7.12) 14-30	32.67(7.54) 22-38	2,1,0
	ENG 231	1	29.00	46.00	75.00	0,1,0
	ENG 221	1	26.00	34.00	60.00	0,0,1
	ENG 277	1	31.00	26.00	57.00	0,1,0
No English Course taken		12	27.50(12.07) 7-46	34.67(9.91) 18-56	62.17(21.03) 25-97	3,8,1

*First number in the series is the number of persons not recommended, the second is the number recommended for Eng 104, the final is the number recommended for regular English

Table 9

Grade Distribution of First English Course

	Black	Amer. I	EDSD	Chicano	Asian	Total
0.0	7	0	1	5	0	13
0.7-1.0	0	0	0	0	1	1
1.1-1.5	1	1	1	2	0	5
1.6-2.0	7	2	1	2	4	16
2.1-2.5	12	2	0	2	6	32
2.6-3.0	13	2	3	6	17	41
3.1-3.5	4	3	3	5	8	23
3.6-4.0	7	2	2	4	10	25
I	0	0	0	0	3	3
N	8	1	1	2	2	14
CR	3	1	0	2	14	20
NC	2	1	0	0	1	4
W	0	3	1	0	0	4
*W	2	1	0	1	0	4
Total	66	19	13	31	66	195

Indian Division students, better even perhaps than Entering GPA. Correlations within the Black and Economically Disadvantaged Student Divisions are also more encouraging. The correlations between test scores and first English course grade over all students apparently are not large because of the nearly zero correlations for the Asian Division, and the Chicano Division. In fact, for the latter the course grade Nelson-Denny, total correlation is actually negative.

Table 10

Correlation of First English Course Grade

with Test Scores and Entering GPA

		Test Score				
Group	(N)	ND-VOC	ND-RC	ND-TOT	W.S.	ENTGPA
All	(146)	.11	.15	.14	.17	.45
American Indian	(12)	.47	.35	.45	.57	.33
Asian	(46)	.05	.15	.12	.00	.30
Black	(51)	.37	.36	.40	.34	.37
Chicano	(26)	.09	-.28	-.18	.18	.48
EDSD	(11)	.29	.44	.39	.26	.65

Earlier in Table 8 we saw that most of the students took English 104 as their first course. This was true even though 43 of the 134 students were not recommended for the course, based on the writing sample and test scores. How did these students do, grade-wise, relative to the 77 students who were recommended to beginning with English 104 and followed the recommendation? Mean grades for Eng. 104* for the two groups of students are presented in Table 11. As can be seen, the students recommended for the course out-performed those who were not by .21 grade points on the average. This difference does not reach statistical significance (t=.99, df=113), nor does it appear to have much practical significance.

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*The grade of English 104 is to be assigned after the completion of English 105 because English 104-5 is a two quarter sequential course. The same grade is given to English 104 and English 105 if a student completed both courses.

Table 11

Mean English 104 Grade for those

Recommended and Not Recommended for the Course

Group	N	Mean	Standard Deviation
Recommended	77	2.63	1.08
Not Recommended	38	2.42	1.07

The correlations presented in Table 10 included all first English course grades regardless of what that course was. In Table 12, we present the same correlations for grades in the various English courses taken by our sample regardless of when the course was taken. Again, the correlations are presented for the group as a whole and within each division. One should be very cautious in interpreting correlations within this Table which are based on small numbers of students.

While some idiosyncracies can be noted in the Table, the pattern which emerges is consistent with that suggested by earlier tables in regard to divisions. The test scores tend to be a good predictor for the American Indian Division and, to a slightly lesser extent for the Black and Economically Disadvantaged Student Divisions. The test scores tend to be unrelated to Chicano and Asian Division student performance. Specific exceptions exist; for example, Asian performance correlates .41 with Nelson-Denny total score for Eng. 181 and .75 for Eng. 111. However, these correlations are based on 7 and 3 students respectively. Clearly, more data will need to be collected before definitive conclusions can be drawn on specific courses other than, perhaps, English 104.

Table 12

Correlations of Test Scores and Entering GPA

with English Course Grades

		Group					
	Predictor	All	AI	As	Bl	Ch	EDSD
AAS 108							
	ND-VOC	.77	--	.77	--	--	--
	ND-RC	-.22	--	-.22	--	--	--
	ND-TOT	.46	--	.46	--	--	--
	W.S.	-.13	--	-.13	--	--	--
	Ent.GPA	.15	--	.15	--	--	--
	(N)	(12)	(0)	(12)	(0)	(0)	(0)
CHST 491							
	ND-VOC	-.28	--	--	--	.28	--
	ND-RC	-.36	--	--	--	-.36	--
	ND-TOT	-.32	--	--	--	-.32	--
	W.S.	.25	--	--	--	.25	--
	Ent.GPA	.79	--	--	--	.79	--
	(N)	(7)	(0)	(0)	(0)	(7)	(0)
ENG 104							
	ND-VOC	.10	.41	.08	.35	.11	.08
	ND-RC	.16	.56	.13	.36	-.19	.38
	ND-TOT	.15	.54	.13	.38	-.05	.28
	W.S.	.09	.35	-.04	.31	.18	-.14
	Ent.GPA	.50	.75	.38	.32	.39	.68
	(N)	(127)	(10)	(45)	(40)	(23)	(9)
ENG 105							
	ND-VOC	.12	.55	.10	.45	-.04	.35
	ND-RC	.13	.51	.16	.44	-.28	.16
	ND-TOT	.14	.57	.16	.49	-.17	.26
	W.S.	.10	.82	-.01	.35	--	-.17
	Ent.GPA	.48	.45	.39	.35	.44	.80
	(N)	(117)	(8)	(44)	(36)	(21)	(8)

Table 12 continued

	Predictor	All	AI	As	Bl	Ch	EDSD
ENG 106							
	ND-VOC	.24	.68	.17	.44	-.72	-1.00
	ND-RC	.10	.58	.09	.63	-.55	-1.00
	ND-TOT	.19	.66	.14	.69	-.66	-1.00
	W.S.	.02	.97	-.32	.56	--	-1.00
	Ent.GPA	-.08	-.24	-.07	.10	.52	-1.00
	(N)	(23)	(3)	(8)	(7)	(3)	(7)
ENG 171							
	ND-VOC	-.07	--	--	-.15	-.42	--
	ND-RC	.01	--	--	.03	.19	--
	ND-TOT	-.04	--	--	-.07	-.20	--
	W.S.	.02	--	--	--	--	--
	Ent.GPA	-.10	--	--	.09	.13	--
	(N)	(44)	(6)*	(18)*	(13)	(6)	(1)
ENG 181							
	ND-VOC	.50	.78	.58	.45	--	-.65
	ND-RC	.27	.59	.09	.08	--	-.27
	ND-TOT	.42	.72	.41	.30	--	.52
	W.S.	.38	.83	.23	.16	--	--
	Ent.GPA	.42	.25	.49	.34	--	1.00
	(N)	(27)	(6)	(7)	(11)	(0)	(3)
ENG 111							
	ND-VOC	.70	1.00	.73	.63	1.00	--
	ND-RC	.46	1.00	.76	.58	-1.00	--
	ND-TOT	.61	1.00	.75	.61	-1.00	--
	W.S.	.41	1.00	.55	.53	--	--
	Ent.GPA	.17	1.00	.42	.17	1.00	--
	(N)	(15)	(2)	(3)	(7)	(2)	(1)
ENG 223							
	ND-VOC	.29	--	--	-.57	--	--
	ND-RC	.73	--	--	.36	--	--
	ND-TOT	.59	--	--	-.05	--	--
	W.S.	.63	--	--	.54	--	--
	Ent.GPA	.82	--	--	.64	--	--
	(N)	(5)	(0)	(1)	(4)	(0)	(0)

*Correlation coefficient cannot be computed because of lack of variation in grades.

Discussion

The present study investigated how well the Nelson-Denny Reading Test scores and Writing Sample recommendation predicted Group II and III EOP students' academic performance at the University of Washington. The academic performance of the students was measured in terms of the general performance and of specific performances. The general performance measures included (1) first year GPA, (2) cumulative GPA, (3) total credits earned, (4) number of quarters completed, and (5) enrollment status as of Spring, 1980. The specific academic performance measures were course grades in various English courses--especially the first English course--taken by the students.

Findings reported in the previous section are rather discouraging in regard to using the Nelson-Denny Test scores and Writing Sample score in the prediction of EOP students' academic performance, both general and specific. In general, these scores had low correlations with both kinds of academic performance measures. The magnitude of the overall correlations was at most .20. In contrast to these low predictability of the Nelson-Denny scores and Writing Sample score, high school GPA showed moderate correlations (around .45) with both kinds of academic performances; these correlations are similar to the ones reported on regularly admitted students.

Although the Nelson-Denny and Writing Sample scores had only low correlations with EOP students' academic performance when those correlations are based on the whole sample, some moderate to high correlations were observed between those scores and the academic performance when the relationship was examined within each division. For example, as indicated in Table 3, the test scores moderately correlated with first year GPA and cumulative GPA among American Indians, Blacks, and Economically Disadvantaged students. In contrast, the correlations were low among Asians. Finally, the correlations among Chicanos were surprising in that they were negative! (See also Tables 10 and 12 for more detailed correlations.) These differential correlations suggest a possibility of differential validity of those tests among different divisions. That is, it seems that the test scores could be moderate predictors of the academic performance among American Indians, Blacks, and Economically Disadvantaged students, while they are not good predictors of the academic performance among Asians and Chicanos.

It was suggested above that both Entering GPA and the Nelson-Denny and Writing Sample scores could be moderate predictors of academic success among American Indians, Blacks, and Economically Disadvantaged. However, it is still another question whether those test scores can significantly improve predictability of EOP students' academic performance beyond the prediction based on high school GPA alone. This question can be addressed by examining multiple correlations between academic performance and both high school GPA and the test scores. The comparison of those multiple correlations with simple correlations between academic performance and high school GPA indicates how useful the test scores are in improving the prediction of EOP students academic performance over use of high school GPA alone.

The multiple correlations (Table 3) indicated that the Nelson-Denny test substantially improved the prediction of EOP students' academic performance only among Economically Disadvantaged students (and slightly among Asians). Among other groups, the Nelson-Denny score did not improve the prediction of EOP students' academic performance beyond what is predicted from high school GPA alone.

Taken together, those results suggest:

1) The test scores are not good predictors of EOP students' academic performance, when the distinction among divisions is ignored.

2) Looking at each division separately, the predictive power of those tests seems to be dependent upon a specific division.

a. Among Economically Disadvantaged students, those tests seem to be moderately successful predictors of their academic performance.

b. Among American Indians and Blacks, the usefulness of those tests as predictors of their academic performance is difficult to assess at this moment. Used independently from high school GPA, those tests seem to have moderate predictive power. However, when combined with high school GPA, those tests do not improve the prediction of academic performance beyond what is predicted from high school GPA alone.

c. Among Asians, those tests do not seem to be useful predictors of their academic performance.

d. Among Chicanos, the negative correlations are puzzling. More research is needed to assess the meaning of the negative correlations.

One possible explanation for the generally low correlations between Nelson-Denny Test scores and indices of academic success may be the difficulty of the test for our sample. The average test scores, especially for the vocabulary portion, were not much above what would be expected from guessing alone. Both reviewers of the test in The Eighth Mental Measurement Yearbook anticipated this problem. Forsyth stated that "...the test seems more suitable for college students than for high school students..this test would be very difficult for high school students" (p. 1208). Raygor is even more strongly critical on this point. "The major criticism this reviewer has to make is that the test was developed on a very high-level population in which 87 percent of the sample were above the status of college freshmen and 64 percent were upperclass college students, graduates, and faculty" (p. 1210). He concluded that "To use this test on anyone other than highly selected college students or adults will produce very questionable measurement results" (p. 1210). Clearly, our sample of Group II and Group III students are not highly selected and are tested very early in their college careers. Hence, the test may have limited predictive validity due to its extreme difficulty relative to the students' ability at the time of testing.

Finally, some limitations of our study, especially those based on sample selection, need to be discussed. Two problems are involved: (1) sample size. and (2) sample selection bias. The correlation results, especially those within each division, may be unstable because of small sample sizes. This problem is especially serious among Economically Disadvantaged (N=14), American Indians (N=20), and Chicanos (N=34). Although close examination of those divisions did not reveal any artifactual effects of few highly deviant cases, the correlation coefficients in those groups may still be highly unstable, and thus any definite conclusions cannot be made until the results are replicated for those groups.

Since our sample is not based on a random selection from a well-defined population, the method by which it was selected in our study could result in a systematic bias in the results. Our sample could possibly be biased in two ways. First, possible bias is due to self-selection of the

sample. Since the sample included Group II students who chose not to take the test (less than half of the Groups II entrants were in the sample), there is a possibility that our sample may be systematically different from all Group II and III students. If the reason for taking the Nelson-Denny Test is in any way related to academic performance, this could bias our results. However, if the reason is not related to academic performance, we do need to worry less about the bias based on the self-selection of the sample. Unfortunately, we cannot assess the extent of this potential bias. Secondly, about 33% of the originally identified students were excluded because of the lack of necessary information on their files. This problem is probably less serious than the first one, since the lack of information in the files is likely to be caused by the administration rather than by the student themselves, and thus it is less likely to be related to their academic performance in any systematic way.

To conclude, it was shown in the present study that the Nelson-Denny Test is not generally a good predictor of EOP students' academic performance. The low predictive power of the Nelson-Denny Test for the EOP students could possibly be explained by the difficulty of the Test among those students who are different from the population on which the Test was originally developed. Thus, the usefulness of the Nelson-Denny Test as a placement and screening tool for the EOP students is questionable, based on these results alone. It will be more meaningfully evaluated, however, by comparing the results with those of the Washington Pre-College Test and the Comprehensive Test of Basic Skills, studies of which are presently underway.

Reference Notes

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